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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/320,349	05/26/1999	DONALD SCOTT WEDGE	019474-00010	4586

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EXAMINER

SWERDLOW, DANIEL

ART UNIT

PAPER NUMBER

2615

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/320,349	<b>Applicant(s)</b> WEDGE, DONALD SCOTT	
	<b>Examiner</b> Daniel Swerdlow	<b>Art Unit</b> 2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3,6-14 and 18-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6-14 and 18-26 is/are rejected.
- 7) ☒ Claim(s) 2 and 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4 May 2006 has been entered.

### ***Claim Objections***

2. Claims 2 and 3 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The content of the audio signals is not limiting on the method for listening.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 through 3, 6 through 10, 14, 23, 24 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Begault et al. (NASA-TM-102279 hereinafter “Techniques”).

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5. Regarding Claim 1, Techniques discloses a method of producing distinct spatial locations for incoming sounds (pp. 4-5; Fig. 3) comprising: receiving a first audio signal from a first source (Input #1); adding only a first differentiation cue (Td, g) to the first audio signal to produce a first stereo audio signal having a right first audio signal (top input of right summing amplifier) and a left first audio signal (top input of left summing amplifier); receiving a second audio signal from a second source (Input #2); producing a second stereo audio signal having a right second audio signal (middle input of right summing amplifier) and a left second audio signal (middle input of left summing amplifier); providing the right first audio signal and the right second audio signal to a right audio transducer (Right speaker); providing the left first audio signal and the left second audio signal to a left audio transducer (Left speaker).

Techniques further discloses that the respective input signals “are heard in ... distinctly different spatial locations” (i.e., allow a user to more easily distinguish the audio signals) (p. 4) and shows no signal flow from the stereo signals back to the inputs.

6. Regarding Claims 2 and 3, as stated above under Claim Objections, the content of the audio signals is not limiting on the method of listening. As such Claims 2 and 3 are rejected on the same grounds as Claim 1.

7. Regarding Claim 6, in addition to the elements cited above apropos of Claim 1, Techniques further discloses differentiation by applying a gain factor of 0.3 to one channel (p. 3, last paragraph). This corresponds to an amplitude difference of 0.5 dB.

8. Regarding Claim 7, Techniques discloses a system for producing distinct spatial locations for incoming sounds (pp. 4-5; Fig. 3) comprising: a first audio input that receives a first monaural signal from a first source (Input #1); a second audio input that receives a second

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monaural signal from a second source (Input #3); a first differentiation block (upper Td, g) coupled to the first audio input providing a differentiation in the form of a 0.5 dB amplitude difference (p. 3, last paragraph); a second differentiation block (upper Td, g) coupled to the second audio input providing a second differentiation; and left and right summing amplifiers that correspond to the respective channel summers claimed. Techniques further discloses that the respective input signals “are heard in ... distinctly different spatial locations” (i.e., allow a user to more easily distinguish the audio signals) (p. 4) and shows no signal flow from the stereo signals back to the inputs.

9. Regarding Claim 8, as shown above apropos of Claim 7, Techniques discloses all elements of the system claimed. While Techniques does not explicitly disclose the second input being produced by a microphone, the claim specifically recites that the microphone is “coupled to the communications system” and is, as such, not a part of the system. Therefore, the microphone is not limiting on the structure of the system claimed.

10. Regarding Claim 9, Techniques discloses a system for producing distinct spatial locations for incoming sounds (pp. 4-5; Fig. 3) comprising: a first audio input that receives a first monaural signal from a first source (Input #1); a second audio input that receives a second monaural signal from a second source (Input #3); a first differentiation block (upper Td, g) coupled to the first audio input providing a differentiation in the form of a 0.5 dB amplitude difference (p. 3, last paragraph); a second differentiation block (upper Td, g) coupled to the second audio input providing a second differentiation in the form of a 0.5 dB amplitude difference (p. 3, last paragraph); and left and right summing amplifiers that correspond to the respective channel summers claimed. Techniques further discloses that the respective input

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signals “are heard in ... distinctly different spatial locations” (i.e., allow a user to more easily distinguish the audio signals) (p. 4), the inputs are radio transmissions (p. 5: Fig. 3 caption) and shows no signal flow from the stereo signals back to the inputs.

11. Regarding Claim 10, in addition to the elements cited above apropos of Claim 9, Begault discloses a third audio signal (Input #2) and a signal splitting function that corresponds to the third differentiation block claimed to produce a third left channel and a third right channel that coupled to the respective summing amplifiers that correspond to the respective channel summers claimed.

12. Claim 14 is essentially similar to Claim 1 and is rejected on the same grounds. There is no input related to positional information corresponding to the audio signals in determining the differentiation of sources disclosed in Techniques.

13. Claim 23 is essentially similar to Claim 9 and is rejected on the same grounds.

14. Regarding Claim 24, in addition to the elements cited above apropos of Claim 1, Techniques discloses differentiation by time delay (Fig. 3, Td).

15. Regarding Claim 26, in addition to the elements cited above apropos of Claim 1, Techniques discloses differentiation by time delay (Fig. 3, Td) and the inputs being radio transmissions (i.e., broadcasts) (Fig. 3 caption).

### ***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Techniques in view of Maher (US Patent 6,111,958).

18. Regarding Claim 11, as shown above apropos of Claim 9, Techniques discloses all elements except a switch for bypassing the differentiation block according to a detection signal. The origination of the input audio signal and the detection signal from a radio receiver external to the claimed system is not limiting on the claimed system. Maher discloses an audio spatial enhancement apparatus that bypasses spatial enhancement processing upon detection of a bypass signal (Fig. 1, reference 42; column 3, lines 34-36). One skilled in the art would have known that such an arrangement permits a user to deactivate spatial processing when it is not needed or desired. It would have been obvious to one skilled in the art at the time of the invention to apply spatial enhancement bypass based on a signal as taught by Maher to the system taught by Techniques for the purpose of realizing the aforesaid advantage.

19. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Techniques in view of Shamma (US Patent 3,848,092).

20. Regarding Claims 12 and 13, as shown above apropos of Claim 9, Techniques discloses all elements except a resistive voltage divider for providing the differential cue. Shamma discloses an audio spatial enhancement apparatus that uses a resistive voltage divider to create spatial effects (Fig. 2, reference 46; column 2, lines 25-28; Column 3, lines 32-38; column 5, lines 2-7). One skilled in the art would have known that such an arrangement provides spatial

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effects simply and economically. It would have been obvious to one skilled in the art at the time of the invention to apply spatial enhancement using a resistive voltage divider as taught by Shamma to the system taught by Techniques for the purpose of realizing the aforesaid advantages.

21. Claims 18 through 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Slater (US Patent 4,941,187,848,092) in view of Begault (US Patent 5,438,623).

22. Regarding Claim 18, Slater discloses an apparatus for integrating audio sources (Figs. 1, 2) comprising: pilot and co-pilot microphone inputs (14) that correspond to the front microphone inputs claimed; a splitter (54) to provide a stereo signal from the pilot and co-pilot microphone inputs; a right summer (34b); a left summer (34a); an aircraft audio input (104) that corresponds to the navigation and/or annunciator input, the first communication input and the second communication input claimed (column 1, lines 18-20 and column 2, lines 58 teach the interfacing of any and all known aircraft avionics audio inputs via the aircraft audio input (104)); a left channel audio output (from 30a) that corresponds to the left output channel claimed; and a right channel output (from 30b) that corresponds to the right channel output claimed. Therefore, Slater anticipates all elements except the application of differentiation cues to the audio inputs to produce differentiated left and right channels to create an impression that the associated sounds originate from different psychoacoustic locations. Begault discloses application of digital filters (Figs. 1 and 2, reference 16) to a plurality of aircraft audio inputs to differentiate them by making them appear to come from separate and discrete positions from about the head of a listener (i.e., create an impression that the associated sounds originate from different psychoacoustic



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locations) (column 2, lines 53-56). Begault further discloses that such an arrangement improves audio communications systems involving intelligibility of multiple streams of speech in a noisy environment (column 2, lines 5-7). It would have been obvious to one skilled in the art at the time of the invention to apply psychoacoustic location differentiation as taught by Begault to the apparatus taught by Slater for the purpose of realizing the aforesaid advantage.

23. Regarding Claim 19, Slater further discloses summing front microphone inputs (Figs. 2 and 5, reference 54; column 6, lines 46-49).

24. Regarding Claim 20, Slater further discloses passenger microphone inputs (column 5, lines 21-24) that correspond to the rear microphone inputs claimed.

25. Regarding Claim 21, Slater further discloses summing rear microphone inputs (Figs. 2 and 5, reference 54; column 6, lines 46-49).

26. Regarding Claim 22, Slater further discloses left channel stereo and right channel stereo inputs that correspond to the mutable stereo entertainment system inputs claimed (column 9, lines 3-8).

27. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Techniques in view of Sommer (US Patent 4,434,508).

28. Regarding Claim 25, as shown above apropos of Claim 1, Techniques discloses all elements except differentiation by differential frequency gain. Sommer discloses an audio spatial enhancement apparatus (abstract) that uses differential frequency gain to differentiate signals (Fig. 1, reference 40, 42; column 4, line 60 through column 5 line 5). Sommer further discloses that such an arrangement makes use of innate correlative ability and substantially

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enhances the readability of signals. It would have been obvious to one skilled in the art at the time of the invention to apply differentiation by differential frequency gain as taught by Sommer to the system taught by Techniques for the purpose of realizing the aforesaid advantages.

### ***Response to Arguments***

29. Applicant's arguments with respect to all claims made in the response filed 4 May 2006 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 571-272-7531. The examiner can normally be reached on Monday through Friday between 7:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh H. Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Daniel Swerdlow  
Primary Examiner  
Art Unit 2615

ds

7 July 2006